

C3 AUTOMOTIVE CAMERA SPECIFICATIONS

V2.0



TIER IV

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Overview



The C3 is a GMSL (Gigabit Multimedia Serial Link) camera specifically designed primarily for automotive applications. It has a resolution of 8.3 MP at 3840 x 2160 px.

Equipped with Sony Semiconductor Solutions' IMX728 back-side illumination stacked CMOS image sensor SoC, the C3 delivers HDR imaging with a dynamic range exceeding 120 dB, LED flicker mitigation (LFM), and motion artifact-free capture at up to 30 fps. Its combination of high sensitivity and high resolution makes the C3 ideal for diverse applications, including object and signal recognition.

The C3 supports a range of lens options, making it adaptable to various applications. Each lens undergoes 6-axis active adjustment during installation to ensure optimal sharpness. Precise calibration helps maintain image quality, even in environments with extreme or fluctuating temperatures.

Indie Semiconductor's GW5300 Image Signal Processor (ISP), integrated into the C3's image sensor, handles various image processing tasks, including lens distortion correction, to deliver optimal image quality for automotive applications. The C3 also supports an external triggering mechanism, enabling synchronized capture with other sensors, such as LiDAR or radar, for seamless sensor integration.

The C3 is designed for large-scale automotive production. With all key components meeting AEC-Q100 (Grade 2), Q101, and Q200 standards, the C3 is engineered to pass rigorous automotive-grade reliability tests.

C3 カメラは 8.3 MP、3840x2160 px の解像度を持つ、車載アプリケーション向け Gigabit Multimedia Serial Link (GMSL) カメラです。

ソニーセミコンダクタソリューションズ製 IMX728 裏面照射型積層 CMOS センサーを搭載し、120 dB 相当のダイナミックレンジ、LED フリッカーの抑制、モーションアーチファクトの低減を最高 30 fps のフレームレートで実現します。C3 カメラは高感度と高解像度を両立し、物体認識、信号認識などの各種アプリケーションに幅広く活用することが可能です。

多彩なレンズのオプションにより、様々なアプリケーションに対応しています。レンズは 6 軸アクティブアライメントを行い取り付けられるので、過酷な温度環境下でも最適なシャープネスを実現することができます。

インディセミコンダクター製 GW5300 Image Signal Processor (ISP) は、レンズ歪み補正を含む様々な画像処理を行い、車載アプリケーションに最適な画質を提供します。C3 は LiDAR やレーダーといった他のセンサー類との同期に必須である外部トリガー機構をサポートし、センサーフュージョンを実現することも可能です。

C3 カメラは車載向けアプリケーションの量産にそのまま適用することが可能です。主要な半導体は、車載向け半導体の信頼性要件である AEC-Q100 Grade2、Q101、および Q200 に準拠しており、車載グレードの信頼性試験をクリアするよう設計されています。

Features

Driver support

Streamline development with device drivers that enable integration with multi-ECU and SoC connectivity.

多彩なプラットフォームに対応

複数の ECU や SoC へ接続するためのデバイスドライバを提供

High Dynamic Range

With a dynamic range of 120 dB, the C3 captures scenes with extreme brightness variations, preserving shadow details and avoiding highlight overexposure.

ハイダイミックスレンジ

120 dB 相当のハイダイナミックレンジで、明暗差の大きな場面でも白飛びや黒つぶれのない映像が撮影可能

High Sensitivity, Low Noise & High Resolution

The C3 maintains the same high sensitivity and low noise as the C1 and C2, and extends its resolution up to 8.3 MP, enabling clearer object recognition at greater distances and a wider field of view.

高感度・低ノイズ

C1 カメラや C2 カメラと同等の高い感度と低いノイズ特性を維持しながら、解像度を 8.3 MP まで拡大し、より遠方の物体認識や、広角での撮影が可能

LED Flicker Mitigation

The C3 reduces flickering from LED light sources, such as traffic signs, headlights, and taillights.

LED フリッカー抑制

信号機、標識、ヘッドランプやテールランプなど、LED を用いた光源によるチラつきを抑制

GMSL2 Interface

The GMSL2 interface allows for long-distance signal transmission and power supply over a single cable connection.

GMSL2 インタフェース対応

長距離（最大 15m）の信号転送と電源供給を 1 本のケーブル接続で実現可能

Automotive-grade components

Built with automotive-grade components, the C3 is designed to operate within a temperature range of -40°C to 85°C.

車載品質

車載グレードの部品を使用し、-40°C ～ 85°C までの温度範囲で動作可能

Compliance

CE, RoHS, FCC, CAN ICE-3/NMB3, UKCA, RCM, KC
(Certification underway)

各種認証への対応

CE / RoHS/FCC / CAN ICE-3 / NMB3 / UKCA / RCM
/ KC

Applications

Autonomous driving

Traffic light recognition
Object recognition
Remote monitoring
Visual SLAM

自動運転

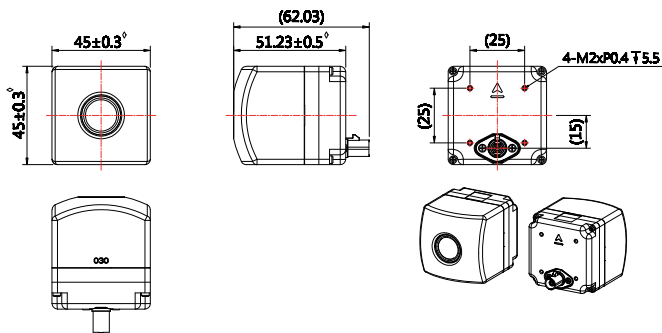
交通信号認識
物体認識
遠隔監視
ビジュアルSLAM

Technical Specifications

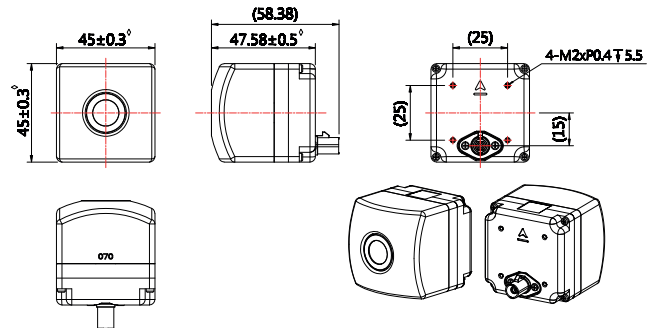
	C3-030	C3-070	C3-120
Mechanical			
Camera Size	45 mm x 45 mm x 51.23 mm	45 mm x 45 mm x 47.58 mm	45 mm x 45 mm x 47.98 mm
Connector	FAKRA Z code with metal shielding		
Lens			
Lens Mount	Glued, active alignment applied		
Field of View (FoV) Without Lens Distortion Correction	LDC off 30°/16.8°	LDC off 70°/39.6°	LDC off 120°/65°
F#	1.7	1.6	1.6
TTL	33.74 mm	30 mm	30.71mm
Image Circle	Φ 9.6 mm	Φ9.6 mm	Φ9.7 mm
IRCF	650 nm @ 50% transmission	650 nm @ 50% transmission	650 nm @ 50% transmission
Depth of Field	17 m - to Infinity Focus peaking distance: 33 m	350 cm - to Infinity Focus peaking distance: 700 m	250 cm - to Infinity Focus peaking distance: 500 m
Power			
Supply	Power over coax		
Level	9-12 V		
Consumption	5.8 W @ 30 fps		
Key Components			
Image Sensor	Sony Semiconductor Solutions IMX728		
Optical Format	Diagonal 9.25 mm, type 1/1.72"		
Pixel Size	2.1 um		
High Dynamic Range	Yes		
LED Flicker Mitigation	Yes		
Serializer	Analog Devices MAX9295A		
ISP	Indie semiconductor GW5300		
Camera Function			
Output Interface	GMSL2, up tp 6 Gbps		
Output Framerate	Up to 30 fps		
Output Image Format	YUV422 8 bit		
Output Image Size	3840x2160		
Shutter Type	Rolling shutter		
Synchronization	HW/SW triggering over GMSL2		
ISP Function			
ISP functions	HDR composition, demosaicing, autoexposure, auto white balance, IQ adjustment (hue, color saturation, brightness, contrast, sharpness)		
Manual Exposure/Gain Control	Yes		
Environmental			
Operating Temperature	From -40°C To +85°C		
Storage Temperature	From -40°C To +105°C		
EMI	CE, FCC, Can ICES-3, UKCA, and RCM		
Vibration	ISO 16750-3: 2012 : 4.1		
Shock	ISO 16750-3: 2012 : 4.2.2		
LVD	Yes		
RoHS	Yes		
Ingress Protection	IP69K		
Software Support			
Drivers	V4L2 Driver, ROS/ROS2 Driver		

Mechanical Drawing

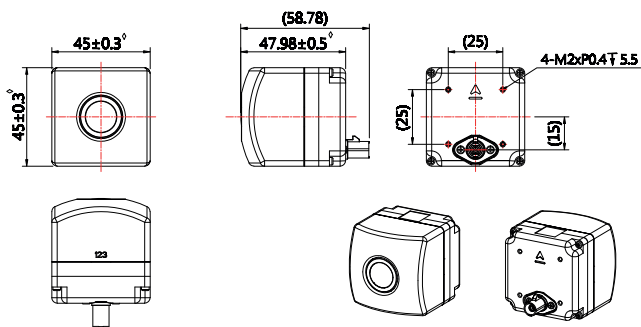
C3-030 (30°)



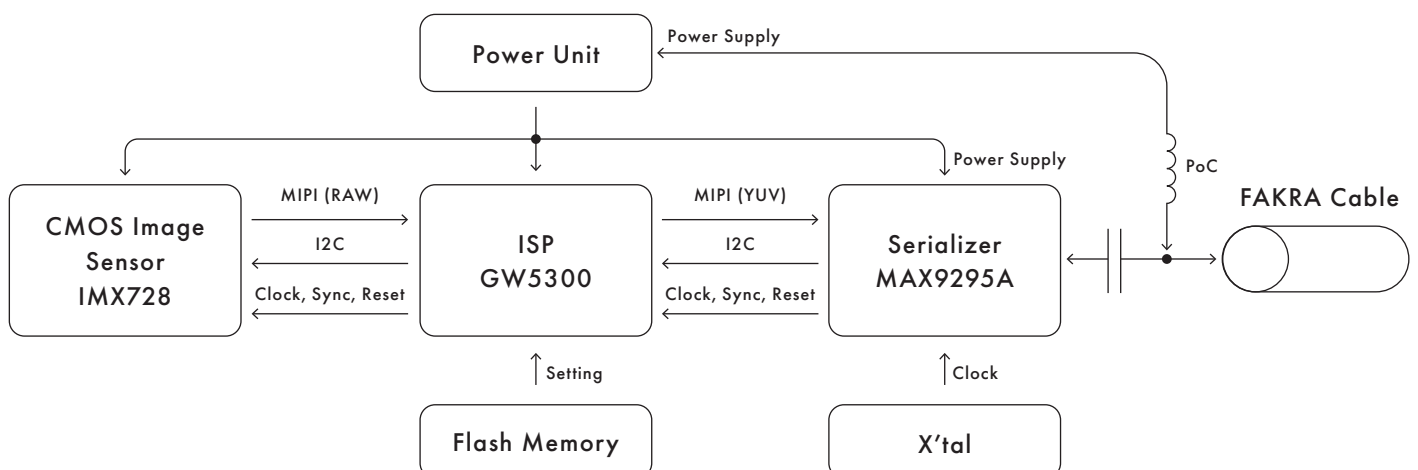
C3-070 (70°)



C3-120 (120°)



Block Diagram



Optional Accessories

GSML2-USB3.0 Conversion Kit



GSML2-10GbE Conversion Module

